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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,291	12/09/2003	Ke Liu	C-2775AHyS	4920

7590

07/27/2005

M. P. Williams  
210 Main Street  
Manchester, CT 06040

EXAMINER
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RIDLEY, BASIA ANNA

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/731,291	Applicant(s) LIU ET AL.	
	Examiner Basia Ridley <i>BR</i>	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2005.
- 2a) ☒ This action is FINAL.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Analysis*

1. Claims 4-13 recite “a system” which does not clearly indicate which statutory category of invention is being claimed. It has been determined that these claims are directed to an apparatus and the appropriate principles for interpreting claims for that particular category of invention have been applied.

### *Claim Objections*

2. Claim 5 is objected to because of the following informalities: the recitation of “undesulfurized hydrogen feed” in line 6 of said claim should be replaced with -- undesulfurized hydrocarbon feed--. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1 and 3-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Louder et al. (USP 3,898,153).

Regarding claim 1, Louder et al. discloses a method for providing desulfurized hydrocarbon feed comprising:

- producing hydrogen-rich reformat (12, 14) from undesulfurized hydrocarbon feed (6) in a small hydrogen generator (9);
- feeding said hydrogen-rich reformat (12, 14) along with the undesulfurized hydrocarbon feed (4) to a hydrogen desulfurizer (5).

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Regarding claim 3, Louder et al. discloses an apparatus for providing desulfurized hydrocarbon feed comprising:

- means (9) including a small hydrogen generator for producing hydrogen-rich reformat (12, 14) from undesulfurized hydrocarbon feed (6);
- a hydrogen desulfurizer (5);
- means (14) for feeding said hydrogen-rich reformat (12, 14) along with the undesulfurized hydrocarbon feed (4) to said hydrogen desulfurizer (5).

Regarding claim 4, Louder et al. discloses a system for desulfurizing hydrocarbon feeds comprising:

- a small hydrogen generator (9) receiving undesulfurized hydrocarbon feed (6) and providing hydrogen containing reformat gas (12, 14);
- a hydrogen desulfurizer (5) receiving said undesulfurized hydrocarbon feed (4) and receiving said hydrogen containing reformat gas (12, 14) from small hydrogen generator (9).

Regarding claim 4, while Louder et al. does not explicitly disclose a source of the undesulfurized hydrocarbon feed, the presence of said source is inherent in the system of Louder et al.

5. Claims 9-10 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Buswell et al. (USP 5,360,679).

Regarding claim 9-10 and 12, Buswell et al. discloses a system for producing hydrogen-rich reformat comprising:

- a source of undesulfurized hydrocarbon feed (0);
- a source of humidified air (Fig. 1, ref. 0, and C7/L43-65);

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- a source of water (192);
- a small hydrogen generator (154) receiving undesulfurized hydrocarbon feed from said source (0) of undesulfurized hydrocarbon feed to produce a first stream of hydrogen-containing reformat gas (stream leaving said generator 154);
- a hydrogen desulfurizer (158) receiving undesulfurized hydrocarbon feed from said source (stream leaving said generator 154) of undesulfurized hydrocarbon feed and receiving said first stream of hydrogen-containing gas (stream leaving said generator 154) from said small hydrogen generator (154) and providing a desulfurized hydrocarbon feed (2);
- a fuel processor including a reformer (168) receiving said desulfurized hydrocarbon feed (2) and said humidified air (2) and producing a second stream of hydrogen-containing reformat (8), a water gas shift reactor (172) receiving said second stream of hydrogen-containing reformat (8) and said water and feeding the resultant gas (12) into a preferential CO oxidizer (142) for producing a third stream of hydrogen-containing reformat (13) for use as fuel (abstract);
- wherein said small hydrogen generator (154) receives said humidified air (Fig. 1, ref. 0, and C7/L43-65) to produce said first stream of reformat gas from said undesulfurized hydrocarbon feed and said air;
- wherein said small hydrogen generator is a mini POX (C7/L43-65).

Regarding limitations recited in claims 9-10 and 12 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd.

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App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

***Claim Rejections - 35 USC § 103***

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 2 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Louder et al. (USP 3,898,153) in view of Hershkowitz et al. (USP 5,883,138).

Regarding claims 2 and 5-8, Louder et al. discloses all of the claim limitations as set forth above. Additionally, while the reference discloses that said small hydrogen generator comprises a reformer (see abstract), the reference does not explicitly disclose said small hydrogen generator comprising a catalytic or non-catalytic partial oxidizer or an autothermal reformer, nor does it disclose a humidified air being feed to said small hydrogen generator.

Hershkowitz et al. establishes equivalency of various processes which can be used for hydrogen generation, including ATR, CPO and POX (C1/L5-C4/L35). The reference also teaches that each of the processes has advantages and disadvantages over each other (C1/L49-C4/L35). As instant specification is silent to unexpected results, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the mini-ATR or mini-CPO or mini-POX for the small hydrogen generator of Louder et al., since such modification would have involved a mere substitution of known equivalent structures. A substitution of known equivalent structures is generally recognized as being within the level of ordinary skill in the art. Further, it would have been obvious to one having ordinary skill in the art at the time of the invention to select one of the known means for hydrogen production, as disclosed by

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Hershkowitz et al., and substitute them for the reformer of Louder et al., for the purpose of obtaining specific benefits and advantages associated with said selected hydrogen production means. The examiner notes, that once a reformer of Louder et al. is replaced with ATR it will require a humidified air (see Hershkowitz et al., C1/L65-C2/L33).

8. Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buswell et al. (USP 5,360,679) in view of Hershkowitz et al. (USP 5,883,138).

Regarding claims 11 and 13, Buswell et al. discloses all of the claim limitations as set forth above, but the reference does not explicitly disclose said small hydrogen generator comprising a catalytic partial oxidizer or an autothermal reformer.

With respect to Hershkowitz et al. the same comments apply as set forth above.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

#### ***Response to Arguments***

10. Applicant's arguments filed on 16 June 2005 regarding claim rejection in view of Admitted Prior Art have been considered but are moot in view of the new ground(s) of rejection.

11. Applicant's arguments filed on 16 June 2005 regarding making a subsequent Office action final have been fully considered but they are not persuasive.

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12. The applicant argues that since Admitted Prior Art is not a patent or printed publication nor indicates public use, the rejection under 35 U.S.C. 102(b) is improper and subsequent Office action should not be made final. This is not found persuasive. A statement by an applicant during prosecution identifying the work of another as "prior art" is an admission that that work is available as prior art against the claims, regardless of whether the admitted prior art would otherwise qualify as prior art under the statutory categories of 35 U.S.C. 102. *Riverwood Int 'l Corp. v. R.A. Jones & Co.*, 324 F.3d 1346, 1354, 66 USPQ2d 1331, 1337 (Fed Cir. 2003). See MPEP § 2129. Therefore rejection under 35 U.S.C. 102(b) over Admitted Prior Art is proper and, if said rejection is maintained in a subsequent Office action or changed because of amendment or IDS, said subsequent Office action should be made final.

13. The applicant argues that amending the claims by replacing "hydrocarbon feed" with "undesulfurized hydrocarbon feed" does not change the scope of the claims, because the only reasonable interpretation which can be given to term "hydrocarbon feed" in view of the specification is "undesulfurized hydrocarbon feed". This is not found persuasive. During examination proceedings, claims are given their broadest reasonable interpretation consistent with the specification. See *In re Graves*, 69 F.3d 1147, 1152, 36 USPQ2d 1697, 1701 (Fed. Cir. 1995). "Moreover, when interpreting a claim, words of the claim are generally given their ordinary and accustomed meaning, unless it appears from the specification or file history that they were used differently by the inventor. [Citation omitted]." *In re Paulsen*, 30 F.3d 1475, 1479, 31 USPQ2d 1671, 1674 (Fed. Cir. 1994). In the instant case, the specification clearly includes two typed of hydrocarbon feed - a undesulfurized hydrocarbon feed (see Fig. 1, ref. 19) and desulfurized hydrocarbon feed (see Fig. 1, ref. 16). Therefore claim recitation of



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“hydrocarbon feed” in view of the specification includes both, undesulfurized and desulfurized hydrocarbon feeds, unless a specific feed is clearly indicated. Amending the claims to recite undesulfurized hydrocarbon feed excludes a desulfurized hydrocarbon feed from the claims, therefore it changes the scope of the claims and requires further search and/or consideration. As said amendment necessitated the new grounds of rejection presented in this Office action, this Office action is properly made final.

### ***Conclusion***

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

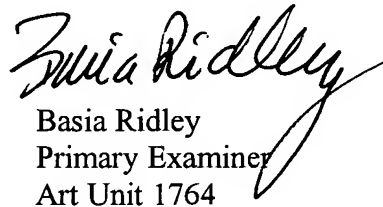
15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (571) 272-1453.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (571) 272-1444.

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The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Technical Center 1700 General Information Telephone No. is (571) 272-1700. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Questions on access to the Private PAIR system should be directed to the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

  
Basia Ridley  
Primary Examiner  
Art Unit 1764

BR  
July 25, 2005